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SECRETARY, BOARD OF OIL, GAS & MINING

BEFORE THE BOARD OF OIL, GAS AND MINING DEPARTMENT OF NATURAL RESOURCES STATE OF UTAH

IN THE MATTER OF THE REQUEST FOR AGENCY ACTION OF WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC FOR AN ORDER AUTHORIZING THE FLARING AND VENTING OF GAS IN EXCESS OF THE AMOUNTS ALLOWED UNDER UTAH ADMIN. CODE **RULE** R649-3-20(1.1) FROM WOLVERINE FEDERAL ARAPIEN VALLEY 24-1 PROVIDENCE FEDERAL 24-4 LOCATED IN THE W1/2 OF SECTION 24, TOWNSHIP 20 SOUTH, RANGE 1 EAST, SLM, SANPETE COUNTY, UTAH

REQUEST FOR AGENCY ACTION

Docket No. 2010-<u>OIO</u>

Cause No. 269-OI

COMES NOW, Wolverine Gas and Oil Company of Utah, LLC ("Wolverine"), acting by and through its attorneys, Beatty & Wozniak, P.C., and pursuant to Utah Code Ann. §40-6-5(3)(f) and Utah Admin. Code Rule R649-3-20(5), and hereby respectfully requests the Board of Oil, Gas and Mining (the "Board") to enter an order authorizing Wolverine or its successors, as operator(s) of the Wolverine Federal Arapien Valley 24-1 Well (the "24-1 Well") and the Providence Federal 24-4 Well (the "24-4 Well"), both located within the W½ of Section 24, Township 20 South, Range 1 East, SLM, Sanpete County, Utah, to indefinitely flare and vent gas in excess of 1,800 MCF per month for each well, being the amount currently allowed without further Board approval under Utah Admin. Code Rule R649-3-20(1.1), subject to the requirement that Wolverine or its successor operator(s) annually, on or before the anniversary date of entry of such order, prepare and submit a written report to the Utah Division of Oil, Gas and Mining (the "Division") confirming whether the conditions for such flaring and venting

have materially changed such that the authorization should be revisited by the Board and, if the Division so determines, requiring Wolverine or its successor operator(s) to reappear before the Board to submit updated evidence and testimony in conformance with Utah Admin. Code Rule R649-3-20(5) to reflect that the authorized flaring and venting is still justified or that modification of the Order to account for the changed conditions is instead required.

In support of this request, Wolverine respectfully states and represents:

- 1. Wolverine is a Michigan limited liability company with its principal place of business in Grand Rapids, Michigan. It is a wholly-owned subsidiary of Wolverine Gas and Oil Corporation. Wolverine is duly qualified to conduct business in the State of Utah, and is fully and appropriately bonded with all relevant Federal and State of Utah agencies.
- 2. The oil and gas underlying the W½ of captioned Section 24 are Federally owned and subject to the terms of United States Oil and Gas Lease UTU-80907. Said lease has been fully and properly committed to the Wolverine Federal Exploratory Unit (the "Unit"). Wolverine is the duly designated operator of the Unit.
- 3. Pursuant to the terms of the governing Unit and Unit Operating Agreements and to an approved application for permit to drill ("APD"), Wolverine spud the 24-1 Well on November 9, 2007 at a surface location 2,331 feet FNL and 549 feet FWL in the SW¼NW¼ of Section 24, drilled the well with a slight vertical deviation to a plugged back depth of 12,755 feet, and completed the well as a producing oil well on April 27, 2009 with producing intervals in what Wolverine has designated as the "Navajo 2," with a top location at 2,330 feet FNL and

590 feet FWL, and all within the SW¼NW¼. Production test results are outlined in Paragraph 7(b) below. The Well is currently in shut-in status awaiting resolution of this Request.

- 4. Additionally, pursuant to the terms of the governing Unit and Unit Operating Agreements and to an approved APD, Wolverine spud the 24-4 Well on January 16, 2009 at a surface location 975 feet FSL and 41 feet FWL in the SW¼SW¼ of Section 24, drilled the well to a plugged back depth of 12,770 feet, and completed the well as a producing oil well on September 23, 2009 with producing intervals in what Wolverine has designated as the "Navajo 1." Production test results are outlined in Paragraph 7(b) below. The Well is in shut-in status awaiting resolution of this Request.
- 5. Both wells are located on remote Federally owned surface lands, with the 24-1 Well at least two miles away, and the 24-4 Well at least one mile away, from any permanent residents.
- 6. Pursuant to Utah Admin. Code Rules R649-3-19(3) and R649-3-20(1.2) and (3), Wolverine filed for and received the approval of the Division for additional testing and to allow flaring and venting at unrestricted rates. However, the limitations of such administrative approval have been reached, resulting in the current shut-in status of both wells. Federal approvals of the flaring and venting during the additional testing period by the United States Bureau of Land Management ("BLM") were obtained in accordance with the provisions of NTL-4A. Copies of said administrative approvals are collectively attached hereto as Exhibit "1" and by this reference incorporated herein.

- 7. As required under the provisions of Utah Admin. Code Rule R649-3-20(5), Wolverine addresses the criteria for submitting and granting this Request as follows:
 - a) Subsection 5.1 – Statement Justifying the Need to Vent or Flare More than the Allowable Amount. The 24-1 Well encountered productive Navajo 1 and Navajo 2, while the 24-4 Well encountered only productive Navajo 1. The Navajo 2 is interpreted as a small hydrocarbon accumulation with limited potential. The Navajo 1, occurring at depths shallower than the Navajo 2, is a low permeability oil and gas reservoir that contains unusually high concentrations of inert gases. The gas composition of the Navajo 1 consists of approximately 80.7% carbon dioxide (CO₂), 5.5% nitrogen, 14% natural gas and a trace of hydrogen sulfide (H₂S). Significant gas treatment and processing would be required to remove the CO₂, nitrogen and trace amounts of H₂S before the gas could be marketable and placed into a pipeline. The infrastructure needed to treat, process and transport the remaining gas to market is not an economically viable option. Therefore, to produce these wells will require flaring and venting gas volumes in excess of the limit of 1,800 MCF per month (the approximate equivalent of 60 MCF per day) under Utah Admin. Code Rule R649-3-20(1.1).
 - b) Subsection 5.2 Description of Production Test Results. Production tests were run in accordance with the Division and BLM administrative approvals. Although the 24-1 Well tested both the Navajo 1 and Navajo 2, the Well is currently completed only in the Navajo 2 and was flow tested at a stabilized daily rate of 67 BOPD, 0 BWPD and 382 MCFPD, with a GOR of 5,702. The 24-4 Well was completed in and tested the Navajo 1 at a stabilized daily rate of 73 BOPD, 52 BWPD and 491 MCFPD, with a GOR of 6,726. As evidenced by the tests, the daily gas production rates exceed the approximate 60 MCFPD regulatory flaring and venting limitation.
 - c) Subsection 5.3 Chemical Analyses of Produced Gas. The chemical analyses from the Navajo 1 and Navajo 2 are collectively attached as Exhibit "2" hereto and by this reference incorporated herein. The two gas compositions differ in that the Navajo 1 has 86% inert gases plus 0.0032% (32 ppm) H₂S, while the Navajo 2 has approximately 19.9% inert gases, and 0.10% (1000 ppm) H₂S.
 - d) **Subsction 5.4 Estimated Oil and Gas Reserves.** Given the limited test data and complex nature of the Navajo 1 and Navajo 2, it is premature to provide an accurate estimate of reserves. Based on the limited flow period, the decline curve analysis of the Navajo 2 suggests a three-year EUR of 32,500 BO and 0.269 BCF

total gas (~ 0.22 BCF excluding inert gases). The Navajo 1 was produced for a limited test in the 24-1 Well and for a 61-day extended test in 24-4 Well. During that initial test period, production declined from approximately 200 BOPD to 73 BOPD over the 61 day test interval. Estimating reserves with this short test period is difficult; however, assuming the decline stabilizes at 7%/year, the 10-year EUR is < 500,000 BO. A preliminary reservoir model, which incorporated PVT data and well-test derived permeability, also was developed to look at field development options for the Navajo 1 reservoir. Under the best case scenario, assuming a fully stimulated completion (e.g., no skin damage), the 10-year EUR was estimated at 970,000 BO and 4.5 BCF total gas (~0.6 BCF gas, excluding inert gases).

- e) Subsection 5.5 Descriptions of Reinjection or Other Conservation-Oriented Alternatives. Wolverine has explored gas treatment options and gas injection. All alternatives are uneconomic for reasons addressed in (g) below.
- f) Subsection 5.6 Description of the Amount of Gas Used in Lease Operations. Because of the high inert gas concentrations and low BTU content of the Navajo 1 produced gas, purchased and trucked propane gas would be used to run the fired vessels and operate the pilots during start-up or other conditions that may limit flow of associated gas from the facility. Under normal conditions, produced gas would be used as pilot gas in order to limit propane consumption. When the Navajo 2 gas is available, it would be used as the fuel source. Wolverine anticipates gas usage to be no more than 10 MCFPD.
- g) Subsection 5.7 Economic Evaluation Supporting Operator's Determination that Conservation of Gas is Not Economically Viable. Wolverine evaluated the following three scenarios for handling the produced gas stream.
 - (i) Option 1 Flaring and venting produced gas. This option would require conventional oilfield handling methods, which would include inline heater, high pressure separator, heater treater, crude oil tankage, flare knock-out and flare unit. This scenario provides the lowest cost for facilities and operating costs and is the option for which approval by the Board is sought by this Request. Options 2 and 3, below, would require additional equipment.

Under Option 1, the only revenue stream would be from the sale of oil produced from both the Navajo 2 and Navajo 1. Capital costs for this option, including drilling, completion and equipping the two wells, would

be approximately \$32.3 million. Assuming the high-case EUR (the "best case scenario"), discounted cashflow at 10% ("NPV10") is \$767,000 and the IRR is approximately 10.4%. It should be noted that this option requires additional well work to further stimulate these wells and increase production over existing production.

- (ii) Option 2 Reinjection of gas. This option would require the Option 1 equipment, plus a compressor and dehydration unit. Total capital cost would be \$32.3 million plus an additional \$1.0 million for compression and dehydration unit, for \$33.3 million. This option also would require either drilling a new well, approximate cost of \$7 million, or conversion of an existing producing well to injection, which would have a significant impairment on oil revenue. These increased costs would make the project uneconomical.
- (iii) Option 3 - Gas treatment, transportation and sale. This option would require construction of a gas treatment plant to remove high concentrations of CO₂, nitrogen and H₂S, construction of ~ 4.6 mile pipeline, and metering station prior to connecting to the pipeline. In addition to the conventional oil handling equipment listed under Option 1, this option would envision a combination of membrane technology and refrigeration, which would produce a salable liquid stream and fuel gas stream, which would have to be further polished to remove the residual CO₂ and nitrogen. It is the opinion of BCCK Engineering, a facilities design firm, that final removal of CO₂ and nitrogen would be cost prohibitive due to the small flow rates. Capital costs for the liquids recovery and removal of bulk CO₂ plant has been estimated at ~ \$8.2 million (3 MMCFPD), which does not include final polishing necessary to make the gas salable. The incremental cost to the facility is not justified under this scenario, and would not be covered by gas revenue.
- h) Subsection 5.8 Any Other Information Pertinent to a Determination of Whether Marketing or Otherwise Conserving the Produced Gas is Economically Feasible. None.

To recover the discovered oil reserves, the flaring and venting of the produced associated gas is the only economically viable option for Wolverine at this time and for the foreseeable future.

- 8. Wolverine seeks relief for indefinite flaring and venting in amounts in excess of those allowed under current regulation. However, cognizant of the Board's statutory responsibilities, Wolverine agrees to annually, on or before the anniversary date of the entry of the Board's order (presuming the relief requested herein is granted), prepare and submit a written report to the Division confirming whether the conditions for such flaring and venting have materially changed such that the authorization should be revisited by the Board and, if the Division so determines, Wolverine agrees to reappear before the Board to submit updated evidence and testimony in conformance with Utah Admin. Code Rule R649-3-20(5) to reflect that the authorized flaring and venting is still justified or that modification of the Order to account for the changed conditions is instead required.
- 9. Wolverine will take all steps required under State and Federal regulation for the protection of the health, safety and welfare of the general public, including but not limited to continued compliance with Federal Onshore Order No. 6 and Utah Admin. Code Rule R649-3-12.
- 10. Presuming the relief requested herein is granted, Wolverine will file a conforming NTL-4A request with the BLM as necessary.
- 11. Wolverine believes and therefore alleges that granting its Request will be in furtherance of the public policies of this State to promote greater recovery of oil without waste and with protection of the correlative rights of all affected owners, and is just and reasonable under the circumstances.

- 12. Wolverine will, in accordance with Board rules, timely submit exhibits and present testimony in support of these allegations.
- 13. Wolverine will separately file a certificate of mailing listing all parties known to it, based on a search of the respective Federal and County realty records and the records of the Division, whose "legally protected interests" will be affected by this Request. There are no respondents or adverse parties known at this time to Wolverine.

WHEREFORE, Wolverine respectfully requests:

- 1. That this matter be set for hearing on February 24, 2010;
- 2. That notice of such hearing be given as provided by law; and
- 3. That, upon sufficient evidence produced and testimony given at the hearing, the Board issue an order:
- a) Authorizing Wolverine or its successor(s) as operator of the 24-1 and 24-4 Wells to indefinitely flare and vent gas in excess of amount currently allowed under Utah Admin. Code Rule R649-3-20(1.1); provided, however, that Wolverine or its successor(s) shall annually prepare and submit a written report on or before the anniversary date of the entry of such order (presuming the relief requested herein is granted) to the Division confirming whether the conditions for such flaring and venting have materially changed such that the authorization should be revisited by the Board and, if the Division so determines, that Wolverine or its successor(s) shall reappear before the Board to submit updated evidence and testimony in conformance with Utah Admin. Code Rule R649-3-20(5) to reflect that the authorized flaring and venting is still justified or that modification of the Order to account for the changed conditions is instead required;
- b) Making such findings and orders in connection with this Request as it deems necessary; and
- c) Providing for such other and further relief as may be just and equitable under the circumstances.

Respectfully submitted this 11th day of January, 2010.

BEATTY & WOZNIAK, P.C.

Frederick M. MacDonald

6925 Union Park Center, Suite 525 Cottonwood Heights, UT 84047

Telephone: (801) 566-8446 Facsimile: (801) 566-8447

E-Mail: FMacDonald@bwenergylaw.com

Attorneys for Petitioner Wolverine Gas and Oil

Company of Utah, LLC

Petitioner's Address:

Wolverine Gas and Oil Company of Utah, LLC Attention: Richard Moritz, Vice President – Land

One Riverfront Plaza 55 Campau, N.W.

Grand Rapids, MI 49503-2616 Telephone: (616) 458-1150 Facsimile: (616) 458-0869

E-Mail: rmoritz@wolvgas.com



United States Department of the Interior



BUREAU OF LAND MANAGEMENT Richfield Field Office 150 East 900 North Richfield, Utah 84701 http://www.blm.gov

IN REPLY REFER TO: 3160 UT050

October 14, 2008

Ellis Peterson Sr. Production Engineer Wolverine Gas and Oil company of Utah, LLC 55 Campau NW Grand Rapids, Michigan 49503

Re:

Well No. Wolverine Federal Arapien Valley 24-1 SW¼NW¼, Sec. 24, T. 20 S., R. 1 E., SLB & M. Sevier County, Utah

Lease No. U-80907, Unit No. U-80800X

Gentlemen:

This correspondence is in regard to the Sundry Notice submitted September 12, 2008, requesting continued testing with gas venting for the referenced well. After a review by this office, the request is approved.

If you have any other questions concerning this matter, please contact Pam Hart of this office at (435) 896-1590.

1/

Stan Andersen

Supervisor Natural Resource

Specialist

cc: UDOGM

UNITED STATES

Form 3160-5 (April 2004)	DEPARTMENT OF THE INTERIOR			FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007		
0.11.10	BUREAU OF LAND MAN			5. Lease Seri		
	RY NOTICES AND RE this form for proposals			6 If Indian	n, Allottee or Tribe Name	
abandoned	d well. Use Form 3160 - 3	(APD) for such pr	oposals.	NA NA	, Thousand	
	TRIPLICATE- Other inst	tructions on reve	rse side.	1	r CA/Agreement, Name and/or No.	
1. Type of Well ✓ Oil Well □	☐ Gas Well ☐ ☐ Other			Wolver 8. Well Na	me and No	
	ne Gas and Oil Company of Utah,	LLC			ine Federal Arapien Valley 24-1	
3a Address 55 Campau NW, Grand R		3b. Phone No. (include 616-458-1150	e area code)	43-039	-30030	
	Sec., T., R., M., or Survey Description)	010-430-1130		10. Field an Wildea	d Pool, or Exploratory Area t	
· -	c. 24, T20S, R1E, SLB&M			11. County	or Parish, State	
, , ,	······, ·····, ······, ······, ······			Sanpet	e County, Utah	
12. CHECK	APPROPRIATE BOX(ES) TO	INDICATE NATUR	RE OF NOTICE, F	EPORT, OF	ROTHER DATA	
TYPE OF SUBMISSION		TY.	PE OF ACTION			
✓ Notice of Intent	Acidize	Deepen	Production (St	art/Resume)	Water Shut-Off	
	Alter Casing Casing Repair	Fracture Treat	Reclamation		Well Integrity ✓ Other Continued testing	
Subsequent Report	Change Plans	New Construction Plug and Abandon	Recomplete Temporarily A	bandon	with gas venting	
Final Abandonment Notic	Convert to Injection	Plug Back	Water Disposal			
following completion of the testing has been completed determined that the site is a This is the discovery winterest in Navajo1 an potentially productive the 30-day limit allow flaring/venting period 8948' and 8854'-8872 A wellbore schematic	well for a new field with multiple p d Navajo2 reservoirs during which but untested intervals remaining ed by NTL-4a for flaring/venting for testing this well for up to 20 a can be completed.	results in a multiple compified only after all require the contential oil accumulation a total of approxima that require testing to of gas is necessary in oudditional days is there	oletion or recompletion ments, including reclan ions. Extensive testifictly 22 MMCF of ga confirm productivit rder to complete this fore requested so tes	in a new intervanation, have been considered the second se	l, a Form 3160-4 shall be filed once n completed, and the operator has mpleted in several intervals of ented/flared. There are two ir content, but an extension of ntinuation of the initial as of intervals at depths of 8942'-	
14. I hereby certify that the Name (Printed/Typed)	foregoing is true and correct	1				
Ellis Peterson	n	Title S	r. Production Engin	eer		
Signature Zlieff	Maron	Date	(9/11/2008		
	THIS SPACE FOR	FEDERAL OR S	TATE OFFICE	USE		
Approved by	L. Hade		title SNRS		Date 9-29-08	
certify that the applicant holds	are attached. Approval of this notice legal or equitable title to those rights ant to conduct operations thereon.	to the continue to a c	office Back	PIELD	FO	
Title 18 U.S.C. Section 1001 and	Title 43 LLS C. Section 1212 make it:	a crime for any person by	owingly and willfully	to make to any	denortment or agangue of the United	

States any false, fictitious or fraudulent statements or representations as to anymatter within its jurisdiction.

(Instructions on page 2)

GROM A. M. SKER 9-26-08 APPROVPL apr



Arapien Valley 24-1 Providence Field API # 43-039-30030 Sanpete County, Utah

(Not to Scale)

Ground Elevation: 5,554' KB Elevation: 5,580'

120' 2017' (13-3/8") 9048' 9090' 9104' - 9131' **1** 9145' – 9154' **手** 9160' – 9166' 9205' **ま** 9217' - 9222' 9950' (stage tool) 10,373' (9-5/8")

12,280'

12,369'

TD = 13,050' KB

12,290' - 12,316'

12,373' - 12,380'

12,755' (5-1/2", 20#)

Vertical Well

Surface: 2331' FNL 549' FWL, SW NW, 24-20S-1E Total Depth: 2370' FNL 620' FWL, SW NW, 24-20S-1E

> 9104' - 9166': Recovery: 2215 BO, 2910 BW, 9.7 MMCF Flashed Gas - 1.47 sp. gr., 30 ppm H2S, 79% CO2, 6% N2, 349 BTU/scf Flashed Oil - 48 °API, 2380 scf/stb

Final Rate: 128 BOPD, 217 BWPD, 740 MCFD w/ 330 psi FTP

<u>9104' – 9131';</u> Recovery: 964 BO, 941 BW, 6.3 MMCF Final Rate: 163 BOPD, 160 BWPD, 1183 MCFD w/ 380 psi FTP

<u>9145' - 9166':</u> Recovery: 550 BO, 129 BW, 1.5 MMCF Final Rate: 150 BOPD, 72 BWPD, 713 MCFD w/ 420 psi FTP

9217' - 9222': Swabbed and flowed 20 hours (recovered 22 BO, 405 BW, gas not measured)

12,290' – 12,316': Recovery: 1338 BO, 122 BW, 4 MMCF Flashed Gas – 1.02 sp. gr., 0.08% H2S, 7% CO2, 9% N2, 1437 BTU/scf Flashed Oil – 48 °API, 2380 scf/stb Final Rate: 160 BOPD, 20 BWPD, 473 MCFD w/ 200 psi FTP

12,373' – 12,380': Flowed oil and gas (no water) for 21 hours before equipment failure.

DEPARTN **BUREAU**

SUNDRY NOTICE

₩ ₁₃				CON	FIDENTIAL	
Form 3160-5 UNITED STATES (April 2004) DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT				FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007 5. Lease Serial No.		
	RY NOTICES AND RE			UTU-809		
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160 - 3 (APD) for such proposals.					Allottee or Tribe Name	
SUBMIT IN	TRIPLICATE- Other ins	tructions on rever	se side.		CA/Agreement, Name and/or No.	
1. Type of Well ☐ ☐ Gas Well ☐ ☐ Other				Wolverine Unit 8. Well Name and No.		
2. Name of Operator Wolverine Gas and Oil Company of Utah, LLC				Wolverin 9. API Well	ne Federal Arapien Valley 24-1	
3a. Address 3b. Phone No. (include area code) 55 Campau NW, Grand Rapids, MI 49503 616-458-1150				43-039-30030 10. Field and Pool, or Exploratory Area Wildcat		
4. Location of Well (Footage, Sec., T., R., M., or Survey Description)						
2331' FNL, 549' FWL, Sec	:. 24, T20S, R1E, SLB&M			11. County or Sanpete	Parish, State County, Utah	
12. CHECK	APPROPRIATE BOX(ES) TO) INDICATE NATUR	E OF NOTICE, R	EPORT, OR	OTHER DATA	
TYPE OF SUBMISSION		TYI	PE OF ACTION			
Notice of Intent Subsequent Report Final Abandonment Notice	Acidize Alter Casing Casing Repair Change Plans Convert to Injection	Deepen Fracture Treat New Construction Plug and Abandon Plug Back	Production (State Reclamation Recomplete Temporarily Ab	[Water Shut-Off Well Integrity ✓ Other Continued testing with gas venting	
If the proposal is to deeper Attach the Bond under wh following completion of th	pleted Operation (clearly state all pert directionally or recomplete horizontal ch the work will be performed or prove e involved operations. If the operation . Final Abandonment Notices shall be eady for final inspection.)	lly, give subsurface location vide the Bond No. on file was results in a multiple comp.	ns and measured and tru with BLM/BIA. Require letion or recompletion in	e vertical depths ed subsequent rep n a new interval.	of all pertinent markers and zones. Orts shall be filed within 30 days a Form 3160-4 shall be filed once	
interest in Navajol an	rell for a new field with multiple in delivery of the least of the lea	ch a total of approximat	ons. Extensive testing	g has been com have been ven	pleted in several intervals of ted/flared. There are two	

This is the discovery well for a new fiel interest in Navajo1 and Navajo2 reser potentially productive but untested intervals remaining that require testing to confirm productivity and reservoir content, but an extension of the 30-day limit allowed by NTL-4a for flaring/venting of gas is necessary in order to complete this testing. A continuation of the initial flaring/venting period for testing this well for up to 20 additional days is therefore requested so testing operations of intervals at depths of 8942'-8948' and 8854'- 8872' can be completed.

A wellbore schematic showing the current mechanical configuration and test results to date is included herewith.

Accepted by the Utah Division of Oil, Gas and Mining

Federai Approval Of This Action is Necessary

Date 9/17/0	2	A	
14. I hereby certify that the foregoing is true and exprect Name (Printed/Typed) Ellis Peterson	19(Title	Sr. Production Engineer	
Signature Elli; William	Date	09/11/2008	
THIS SPACE FOR FEDERAL	OR	STATE OFFICE USE	
Approved by Conditions of approval, if any, are attached. Approval of this notice does not warran certify that the applicant holds legal or equitable title to those rights in the subject lea which would entitle the applicant to conduct operations thereon.		Title Office	Date
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any States any false, fictitious or fraudulent statements or representations as to any matter	person within	knowingly and willfully to make to a its jurisdiction.	any department or agency of the United

(Instructions on page 2)

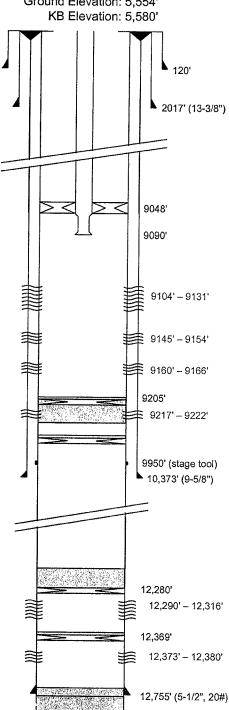
SEP 1 5 2008



Arapien Valley 24-1 Providence Field API # 43-039-30030 Sanpete County, Utah

(Not to Scale)

Ground Elevation: 5,554'



TD = 13,050' KB

Vertical Well

2331' FNL 549' FWL, SW NW, 24-20S-1E Surface: Total Depth: 2370' FNL 620' FWL, SW NW, 24-20S-1E

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Flashed Oil - 48 °API, 2380 scf/stb

Final Rate: 128 BOPD, 217 BWPD, 740 MCFD w/ 330 psi FTP

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CONFIDENTIAL CONFIDENTIAL

STATE OF UTAH			FORM 9		
	DEPARTMENT OF NATURAL RESOU DIVISION OF OIL, GAS AND MI			EASE DESIGNATION AND SERIAL NUMBER:	
SUNDRY	NOTICES AND REPORTS	S ON WELLS	6. I	FINDIAN, ALLOTTEE OR TRIBE NAME: Δ	
Do not use this form for proposals to drill II	ew wells, significantly deepen existing wells below cu	rent bottom-hole depth, reen	7. \	UNIT OF CA AGREEMENT NAME: /olverine Federal Unit	
drill horizontal la	terals. Use APPLICATION FOR PERMIT TO DRILL	form for such proposals.		WELL NAME and NUMBER:	
OIL WELL	GAS WELL OTHER		\ w	olv. Fed. Arapien Valley 24-1	
2. NAME OF OPERATOR: Wolverine Gas and Oil Co	moany of Utah II C		i ·	API NUMBER: 303930030	
3. ADDRESS OF OPERATOR:				FIELD AND POOL, OR WILDCAT:	
55 Campau NW CIT	, Grand Rapids STATE MI ZIF	49503-2616 (61	6) 458-1150 V	Vildcat	
FOOTAGES AT SURFACE: 2331'	FNL, 549' FWL		со	unty: Sanpete	
QTR/QTR, SECTION, TOWNSHIP, RAN	GE, MERIDIAN: SWNW 24 20S	E S	STA	ATE: UTAH	
11. CHECK APP	ROPRIATE BOXES TO INDICAT	TE NATURE OF I	NOTICE, REPORT,	OR OTHER DATA	
TYPE OF SUBMISSION			OF ACTION		
✓ NOTICE OF INTENT	ACIDIZE	DEEPEN		REPERFORATE CURRENT FORMATION	
(Submit in Duplicate)	ALTER CASING	FRACTURE TREAT		SIDETRACK TO REPAIR WELL TEMPORARILY ABANDON	
Approximate date work will start:	CASING REPAIR CHANGE TO PREVIOUS PLANS	NEW CONSTRUCT	ř	TUBING REPAIR	
M	CHANGE TUBING	PLUG AND ABANG		VENT OR FLARE	
SUBSEQUENT REPORT	CHANGE WELL NAME	PLUG BACK	,ON [WATER DISPOSAL	
(Submit Original Form Only)	CHANGE WELL STATUS	PRODUCTION (ST	ART/RESUME)	WATER SHUT-OFF	
Date of work completion:	COMMINGLE PRODUCING FORMATIONS	RECLAMATION O		OTHER:	
	CONVERT WELL TYPE	RECOMPLETE - D	IFFERENT FORMATION		
12. DESCRIBE PROPOSED OR CO	DMPLETED OPERATIONS. Clearly show all	pertinent details including	g dates, depths, volumes, e	с.	
	TIAL STATUS REQUESTED			ı	
Approval is hereby requested to flare gas for a period of 60 days while production testing the Navajo2 Formation at the Wolverine Federal Arapien Valley 24-1 well. This is requested to establish stabilized producing rates and help determine commercially. Additional details are provided in the cover letter to this notice and in the attached Completion Summary and Results. Attachments: Completion Summary and Results, Well Bore Schematic					
NAME (PLEASE PRINT) EIlis M. P	eterson	11166	Senior Production E	ngineer	
(5/2000) BY: A Flare Stock show	AND MINING Actio	Approval Of This In Is Necessary Itructions on Reverse Side) [Atended textures	RECEIVED UCT 2 2 2008 DIV. OF OIL, GAS & MII)	CONFIDENTIAL	

UNITED STATES DEPARTMENT OF THE INTERIOR

Form 3160-5 UNITED STATES April 2004) DEPARTMENT OF THE INTERIOR			FORM APPROVED OMB No. 1004-0137 Expires: March 31, 2007		
	BUREAU OF LAND MANAGEMENT SUNDRY NOTICES AND REPORTS ON WELLS				
				UTU-809	07 Allottee or Tribe Name
	this form for proposals vell. Use Form 3160 - 3 (NA NA	Anotee of The Name
	RIPLICATE- Other inst	ructions on rev	erse side.	7. If Unit or (CA/Agreement, Name and/or No.
1. Type of Well Oil Well □ □	Gas Well□□ Other			8. Well Name	
2. Name of Operator Wolverine	Gas and Oil Company of Utah,	LLC			e Federal Arapien Valley 24-1
3a Address 3b. Phone No. (include area code) 55 Campau NW, Grand Rapids, MI 49503 616-458-1150			43-039-3	0030	
4. Location of Well (Footage, Sec.		0.00 1.00		Wildcat	Pool, or Exploratory Area
2331' FNL, 549' FWL, Sec. 2	4, T20S, R1E, SLB&M			11. County or	Parish, State
				Sanpete	County, Utah
	APPROPRIATE BOX(ES) TO	INDICATE NATI	URE OF NOTICE, I	EPORT, OR	OTHER DATA
TYPE OF SUBMISSION		T	YPE OF ACTION		
Notice of Intent	Acidize Alter Casing	Deepen Fracture Treat	Production (St	art/Resume)	Water Shut-Off
Subsequent Report	Casing Repair	New Construction	Reclamation Recomplete		Well Integrity ✓ Other Extended production
Final Abandonment Notice	Change Plans	Plug and Abandor	Temporarily A		test with flaring gas
	Convert to Injection eted Operation (clearly state all perti	Plug Back	Water Disposal		
following completion of the ir testing has been completed. F determined that the site is read Approval is hereby reque	ested to flare gas for a period of	results in a multiple confiled only after all required to the confidence of 60 days while produced to the confile of 60 days while produced to 60 days while 60 day	mpletion or recompletion irements, including reclan	in a new interval, a nation, have been o	a Form 3160-4 shall be filed once completed, and the operator has
Arapien Valley 24-1 well.	This is requested to establish ser to this notice and in the atta	stabilized producing	rates and help determ	ine commercial	ly. Additional details are
Attachments: Completion	n Summary and Results, Well I	Bore Schematic, UD	OGM Approval for Ex	tended Flaring	
					m. "
					:
					a de la companya de l
					STEAL STATE
 I hereby certify that the fore Name (Printed/Typed) 	egoing is true and correct				
Ellis Peterson		Title	Sr. Production Engin	eer	<u> </u>
Signature All M	Marin	Date	1	1/10/2008	(A) (B)
	THIS SPACE FOR I	FEDERAL OR	STATE OFFICE	USE	
Approved by	PAL		TOTAL SAFTER		1/ 20 08
Approved by Conditions of approval, if any are	attached. Approval of this notice	does not warrant or	Title SNES	Dat	· //-20-08
certify that the applicant holds lega which would entitle the applicant t	al or equitable title to those rights in conduct operations thereon.	n the subject lease	Office FICHE	en F	TO.
Title 18 U.S.C. Section 1001 and Tit States any false, fictitious or fraudu	le 43 U.S.C. Section 1212 make it a	crime for any person as to any matter within	knowingly and willfully		epartment or agency of the United

(Instructions on page 2)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007

	Enphot Tracer 5
Lease Seria	l No.
UTU-80	907

SUNDRY	SUNDRY NOTICES AND REPORTS ON WELLS		010 00,0,				
Do not use th abandoned w	Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.			If Indian, Allottee or Tribe Name NA			
	IPLICATE- Other insti	ructions on r	everse	side.	7. If Unit or CA/Agreement, Name and/or No. Wolverine Unit 8. Well Name and No.		
1. Type of Well Oil Well □ □	Gas Well□□ Other						
2. Name of Operator Wolverine G	2. Name of Operator Wolverine Gas and Oil Company of Utah, LLC			Provid 9. API W	ence Federal 24-4 ell No.		
3a Address 3b. Phone No. (include area code)		a code)	<u></u>	-30040			
55 Campau NW, Grand Rapid 4. Location of Well (Footage, Sec.,		616-458-115	0 		10. Field ar Wilder	nd Pool, or Exploratory at	Area
975' FSL, 41' FWL, Sec. 24, T					11, County	or Parish, State	***************************************
9/3 FSE, 41 FYIL, SEC. 24, 1	zus, Rie, seben				Sanpet	te County, Utah	
12. CHECK A	PPROPRIATE BOX(ES) TO	INDICATE NA	ATURE	OF NOTICE, R	EPORT, OI	R OTHER DATA	A. C. (1/4/2000 to 4)
TYPE OF SUBMISSION			TYPE (F ACTION			
Notice of Intent	Acidize Alter Casing Casing Repair	Deepen Fracture Treat New Construc	P**	Production (Standardion Recomplete	art/Resume)	Water Shut-Off Well Integrity Other Continu	
Subsequent Report	Change Plans	Plug and Abar		Temporarily At	oandon		s venting
Final Abandonment Notice	Convert to Injection	Plug Back		Water Disposal			
accumulations. Extensive than 10 MMCF of gas was produce the Navajo1 comfor sufficient time as need limit allowed by NTL-4a finitial flaring/venting perinclusive of the gas produprocessing the gas, and the	4-4 is the first confirmation te testing has been completed on a vented/flared. After venting pletion interval in order to coled to acquire production data for flaring/venting of gas will rod for up to 30 additional day ced to date does not exceed 50 e gas being flared has low BT wing the current mechanical c	several intervals or flaring on 27 of lect down-hole fl required for det os is requested. To MMCF. This we U and no market	s of intere days while uid samp ermining te time to otal produ ell is locat value in s	st in Moenkopi a testing various; es for laborator; if the well can pr complete necessication will be limed in an isolated on unprocessed s	nd Navajo1 : perforation i y testing. It the roduce payin ary testing of ited so that the area without tate.	formations during value of the continuity of the continuity of the world and the continuity of the well, a continuity of the well, a continuity of the cotal gas vented/tinfrastructure for some continuity of the cotal gas vented gas ven	which no more II need to see producing see the 30-day stion of the flared shipping or
						JUL	2 4 2009
14. Thereby certify that the fore Name (Printed/Typed)	going is true and correct	1				Dilasta	تت بدند مسوريوس
Ellis Peterson		T	itle Sr. P	roduction Engin	eer	Kichtield B	LM Field Offi
Signature Slight	Jum		Date		07/22/2009		
	THIS SPACE FOR	FEDERAL C	OR STA	TE OFFICE	USE		
Approved by Conditions of approval, if any, are certify that the applicant holds lega which would entitle the applicant t	l or equitable title to those rights		Title	SNZ, RICH	s auto	Date 7-2	7-09 Ource
							

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Condition of Approval:

"A 30-day extension is granted for Wolverine Gas & Oil to vent/flare gas on the Providence 24-4 well through August 24, 2009. Should Wolverine need more time to vent or flare this well, an additional extension may be requested from the BLM Richfield Field Office."

UNITED STATES

Form 3160-5 (April 2004) DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160 - 3 (APD) for such proposals. SUBMIT IN TRIPLICATE- Other instructions on reverse side. 1. Type of Well Oil Well Gas Well Other 2. Name of Operator Wolverine Gas and Oil Company of Utah, LLC 3a. Address 55 Campau NW, Grand Rapids, MI 49503 4. Location of Well (Footage, Sec., T., R., M., or Survey Description)					FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007 rial No. 80907 am, Allottee or Tribe Name or CA/Agreement, Name and/or No. erine Unit ame and No. dence Federal 24-4 (ell No. 0-30040 and Pool, or Exploratory Area at
975' FSL, 41' FWL, Sec. 24, T	= :				or Parish, State
				Sanpei	te County, Utah
12. CHECK A	PPROPRIATE BOX(ES) TO I	NDICATE NAT	URE OF NOTICE, R	EPORT. OI	R OTHER DATA
TYPE OF SUBMISSION			YPE OF ACTION		
Attach the Bond under which the following completion of the investing has been completed. Findetermined that the site is ready The Providence Federal 24 accumulations. Extensive than 10 MMCF of gas was produce the Navajo1 comp for sufficient time as neede limit allowed by NTL-4a for initial flaring/venting periodent.	Adonary of recomplete nonzontaly, is e work will be performed or provide olved operations. If the operation res al Abandonment Notices shall be file for final inspection.) -4 is the first confirmation test the esting has been completed on sevented/flared. After venting or is letion interval in order to collect to acquire production data recompleting of the end of the production of the form of the end of the production of the end of the	give subsurface loca the Bond No. on fil ults in a multiple cond of only after all requi- of a new field discoveral intervals of flaring on 27 days to down-hole fluid quired for determation aflow adequate fit	Temporarily Ab Water Disposal stimated starting date of an tions and measured and true e with BLM/BIA. Require upletion or recompletion in rements, including reclamate overy and it had appare interest in Moenkopi ar while testing various p samples for laboratory ining if the well can pre ne to complete necessal	andon y proposed we e vertical depti d subsequent r 1 a new interva ation, have bee ent multiple p id Navajol fe erforation in testing. It the oduce paying ry testing of t	l, a Form 3160-4 shall be filed once in completed, and the operator has potential hydrocarbon ormations during which no more tervals, there is still need to en needs to continue producing quantities. Because the 30-day the well, a continuation of the
A wellbore schematic show	and to date does not exceed 50 MI gas being flared has low BTU at ing the current mechanical conf	na no mai ket vali	ie in an unprocesseu sea	iie.	
Name (Printed/Typed) Ellis Peterson		TO A	On Brand 4 -		
	/2	Title	Sr. Production Enginee	r	
Signature	Murn	Date		/22/2009	
	THIS SPAGE FOR FE	DERAL OR	STATE OFFICE U	JSE	
Approved by Solutions of approval, if any, are attentify that the applicant holds legal of	r equitable title to those rights in the	s not warrant or	Title Pet_Eng	Da	ate 7/30/09
which would entitle the applicant to o	onduct operations thereon. 3 U.S.C. Section 1212, make it a crit		MON	make t-	J

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and States any false, fictitious or fraudulent statements or representations as to anymatter within its jurisdiction. any department or agency of the United RECEIVED

(Instructions on page 2) & Required Testing

JUL 27 2009

UNITED STATES DEPARTMENT OF THE INTERIOR BURFALLOF LAND MANAGEMENT

BUREAU OF LAND MANAGEMENT SUNDRY NOTICES AND REPORTS ON WELLS					ires: March 31, 2007	
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160 - 3 (APD) for such proposals.					ottec or Tribe Name	
SUBMIT IN TR	IPLICATE- Other instr	uctions on rever	se side.	7. If Unit or CA/Agreement, Name and/or No.		
1. Type of Well Oil Well 🗆 📗	Gas Well Other			Wolverine Unit 8. Well Name and No		
2. Name of Operator Wolverine Gas and Oil Company of Utah, LLC					Federal 24-4	
Ba Address 3b. Phone No. (include area code) 55 Campau NW, Grand Rapids, MI 49503 616-458-1150			area code)	43-039-30040 10. Field and Pool, or Exploratory Area		
4. Location of Well (Footage, Sec., T., R., M., or Survey Description)					Wildcat	
975' FSL, 41' FWL, Sec. 24, T20S, R1E, SLB&M					rish, State	
	······································			Sanpete Cou	• *	
12. CHECK AI	PPROPRIATE BOX(ES) TO	INDICATE NATUR	E OF NOTICE, RE	EPORT, OR OT	HER DATA	
TYPE OF SUBMISSION		TYP	E OF ACTION			
Notice of Intent Subsequent Report Final Abandonment Notice	Acidize Alter Casing Casing Repair Change Plans Convert to Injection	Deepen Fracture Treat New Construction Plug and Abandon Plug Back	Production (Star Reclamation Recomplete Temporarily Aba Water Disposal		Water Shut-Off Well Integrity Other Continued testing with gas venting	
13. Describe Proposed or Complete	ed Operation (clearly state all pertin	ent details, including estin	nated starting date of any	proposed work and	approximate duration thereof	

FORM APPROVED

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

The Providence Federal 24-4 is the first confirmation test to a new field discovery having multiple hydrocarbon accumulations. Extensive testing has been completed at this well on several intervals of interest in the Moenkopi and Navajo1 formations. Because the 30-day limit allowed by NTL-4a for flaring/venting of gas did not allow adequate time to complete the necessary testing of this well, an extension to allow flaring was requested and granted through August 24, 2009. During the 30-day extension period, a pressure build-up test was conducted and followed by controlled flow conditioning and subsurface sampling, so the well was produced continually for only 17 days. Producing rates during flow testing have changed from initial daily volumes of 1262 MCF, 205 BO, and 11 BW with FTP of 405 psi to 747 MCF, 105 BO, and 46 BWPD with FTP of 250 psi on August 21, 2009. Total gas production from the well through August 21, 2009 was 25.5 MMCF. Because potential commerciality needs to be established for this field based in part on extrapolation of stable performance of this well, continued flow testing with flaring through September 23, 2009 is requested to allow production trends to be better defined. Total production will be limited if necessary so that the total gas vented/flared inclusive of the gas produced to date does not exceed 50 MMCF, but it does not appear that this limit will be exceeded prior to September 23, 2009.

14. I hereby certify that the foregoing is true and correct Name (Printed/Typed) Ellis Peterson	Title	Sr. Production Engineer			
Signature Miss Marion	Date	08/24/2009			
THIS SPACE FOR FEDERAL OR STATE OFFICE USE					
Approved by Star L. A.L.		Title SNR5 Date 8/26/89			
Conditions of approval, if any, are attached. Approval of this notice does not warran certify that the applicant holds legal or equitable title to those rights in the subject lewhich would entitle the applicant to conduct operations thereon.	nt or ase	Office BICUFICED FRAGE DEFICE			
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any States any false, fictitious or fraudulent statements or representations as to any matter	person within	knowingly and willfully to make to any department or agency of the United its jurisdiction.			

CONFIDENTIAL

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.			UTU-80907 6. If Indian, Allottee or Tribe Name		
			SUBMIT IN TR	PLICATE- Other instruc	tions on rever
1. Type of Well Oil Well □	1. Type of Well Gas Well O Other			8. Well Nam	
					nce Federal 24-4
	ns and Oil Company of Utah, LL			9. API Wel	
3a. Address 55 Campau NW, Grand Rapids, MI 49503 3b. Phone No. (include area code) 616-458-1150			10. Field and	Pool, or Exploratory Area	
4. Location of Well (Footage, Sec., 2	T., R., M., or Survey Description)			Wildcat	
975' FSL, 41' FWL, Sec. 24, T	20S, R1E, SLB&M			•	r Parish, State County, Utah
12. CHECK AF	PROPRIATE BOX(ES) TO IN	DICATE NATUR	E OF NOTICE, RE	PORT, OR	OTHER DATA
TYPE OF SUBMISSION	,	TYP	E OF ACTION		ONLY THE TAXABLE PROPERTY.
Notice of Intent	Acidize Alter Casing Casing Repair	Deepen Fracture Treat	Production (Star	t/Resume)	Water Shut-Off Well Integrity Other Continued testing
Subsequent Report	Change Plans	New Construction Plug and Abandon	Recomplete Temporarily Aba	ndon	with gas venting
Final Abandonment Notice	Convert to Injection	Plug Back	Water Disposal		
has been completed at this NTL-4a for flaring/venting requested and granted threcontrolled flow conditionin have changed from initial 250 psi on August 21, 2009 to be established for this fi September 23, 2009 is requ	-4 is the first confirmation test to well on several intervals of interc of gas did not allow adequate ti ough August 24, 2009. During the	est in the Moenkopi ne to complete the n 30-day extension p e well was produce 300, and 11 BW with vell through August a of stable performa to be better defined	and Navajo1 formaticessary testing of the criod, a pressure built continually for only in FTP of 405 psi to 74 21, 2009 was 25.5 M nice of this well, continual production w	ons. Because is well, an ex ld-up test wa 17 days. Pro 17 MCF, 105 MCF. Becaus inued flow te ill be limited	the 30-day limit allowed by tension to allow flaring was s conducted and followed by educing rates during flow testing BO, and 46 BWPD with FTP of se potential commerciality needs sting with flaring through if necessary so that the total gas
14. I hereby certify that the foreg Name (Printed/Typed)	oing is true and correct	1			DIV. OF OIL, GAS & MINING
Ellis Peterson		Title Sr.	Production Enginee	r	
Signature Mis Mis		Date	08	/24/2009	
~	THIS SPACE FOR FE	DERAL OR ST	ATE OFFICE U	JSE	
Approved by	Mit	Ti	DIC	D	ate 9/8/09
Conditions of approval, if any, are a certify that the applicant holds legal which would entitle the applicant to	or equitable title to those rights in the	4	fice Oog m	Fe	oderal Approval Of This Action Is Necessary

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Job Number: 83388.001

FESCO, Ltd. 1100 Fesco Ave. - Alice, Texas 78332

For: Wolverine Gas and Oil Corporation

One Riverfront Plaza 55 Campau NW

Grand Rapids, Michigan 49503-2616

Sample: Arapien Valley 24-1

Gas Sales Line

Spot Gas Sample @ 160 PSIG & 72 °F

Date Sampled: 5/11/2008

CHROMATOGRAPH EXTENDED ANALYSIS - SUMMATION REPORT

COMPONENT	MOL%	GPM
Hydrogen Sulfide*	0.100	
Nitrogen	11.753	
Carbon Dioxide	8.128	
Methane	63.235	
Ethane	8.433	2.301
Propane	4.093	1.150
Isobutane	1.303	0.435
n-Butane	1.364	0.439
2-2 Dimethylpropane	0.020	0.008
Isopentane	0.594	0.222
n-Pentane	0.368	0.136
Hexanes	0.341	0.143
Heptanes Plus	0.268	0.114
Totals	100.000	4.948

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.427	(Air=1)
Molecular Weight	98.93	
Gross Heating Value	5286	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	0.838	(Air=1)
Compressibility (Z)	0.9965	
Molecular Weight	24.20	
Gross Heating Value		
Dry Basis	1075	BTU/CF
Saturated Basis	1057	BTU/CF

^{*}Hydrogen Sulfide tested on location by: Stained Tube Method (GPA 2377)

Results: 62.89 Gr/100 CF, 1000.0 PPMV or 0.100 Mol %

Base Conditions: 15.025 PSI & 60 Deg F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: CW Processor: RG Cylinder ID: G-1193

David Dannhaus 361-661-7015



Applied Technology Services

1210 D Street, Rock Springs, WY 82901 (307) 352-7292

Meter Name:

Providence Federal 24-4

Field Name: Analyst:

COVENANT FIELD [sic, Providence Field]

MCMILLAN

Meter Location #: Cylinder Pressure: W244

Report Date:

06/24/2009 18:03

Sample Dates(s): 06/24/2009 to 06/24/2009

Line Pressure: 15 Flowing Temp:

Gas Analysis by Chromatograph @14.73

NAME	MOLE%	BTU	SG	GPM
Nitrogen	5.4866	0.0000	0.0531	0.0000
Methane	6.0871	61.6219	0.0337	0.0000
CO2	80.7442	0.0000	1.2269	0.0000
Ethane	1.8978	33.6631	0.0197	0.5074
H2S	0.0000	0.0000	0.0000	0.0000
Propane	1.8620	46.9582	0.0283	0.5128
i-Butane	0.4437	14.4621	0.0089	0.1452
n-Butane	1.1453	37.4496	0.0230	0.3610
i-Pentane	0.4985	19.9906	0.0124	0.1823
n-Pentane	0.5841	23.4690	0.0146	0.2117
Hexanes	0.6275	29.9123	0.0187	0.2580
Heptanes	0.3990	22.0062	0.0138	0.1840
Octanes	0.1821	11.4058	0.0072	0.0933
Nonanes	0.0421	2.9523	0.0019	0.0237
Ideal Total	100.0000	303.8909	1.4621	2.4793

Gross BTU/Real Cu Ft. @ 60 deg F

Pressure Base = 14.73 14.65 15.025 Dry = 305.7456304.0750 311.9070 Saturated = 301.4516299.7803 307.6153 **Actual BTU** = 305.7456 304.0750 311.9070 **Real S.G.** = 1.4704561.470407 1.470636 Compressibility = 0.9939340.993967 0.993812 **Gasoline Content**

Pressure Base = 14.73 Propane GPM = 0.5128Butane GPM = 0.506114# Gasoline GPM = 1.0603**26# Gasoline GPM = 1.4865** Total GPM = 2.4793

Sulfur Content Mercaptans ppm = N/AH2S ppm = N/A

Dewpoints H2O #/mmcf = N/AHydrocarbon = N/A@ psig = N/A